



UNIVERSITY OF
BIRMINGHAM

**Team Project
Group 27-22**

Freebees

M3 Submission: App Description

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1. Problem Statement

Every year, thousands of students temporarily resided in the local neighborhood departing from the University of Birmingham must get rid of used items and furniture as they are not able to carry these items home. As a result, loads of used goods and furniture, along with other waste, were left on the street during summer. Local neighborhood Selly Oak, for instance, has been mocked as “Smelly Oak” as terrible smell evolved during July heats.



Figure 1 Logo of FreeBees

1.1. Concept description

Freebees is a web application and a handy platform for locals to give away and take second items for free with aims to minimize waste and promote sustainable living. During the cost-of-living crisis, the app should also be able to help people to save money. The following personas and mockups depict potential users of the app and provides a look-and-feel of the application itself.

1.2. About Us

We are Freebees, a group of Computer Science Students at the University of Birmingham. As software engineers, we strive to provide software solutions that could address real world issue as outlined above. By producing a web app that aids the community to give used items a second life for free, we hope to achieve: (1) Reducing waste, (2) Promoting sustainability, and (3) Lessening cost-of-living.

2. Features deployed

The following shows individual feature completed by each team members.

Charity user by Hugo Biais	Publish item by Catrin Lam	Item management by Man Cheung
Search item by Mohammed Bu Khamsin	Chat by Daniel Dubrov	User profile & appearance setting by Yumo Deng
Request by Yihong Diao		

2.1. Test Account

The following test accounts have been created for evaluation purposes.

username: adminAccount	username: demoAccount
password: N4SXd8FrXDAjbgz	password: 7TmDBEXHPivveZa
role: admin	role: user

2.2. Charity Feature

The Charity feature is an interface specifically designed for FreeBees' charity users. It includes the following features:

- A way for charity user to create a Charity User Account
- A way for the admin team to authenticate Charity Users
- A way for Charity Users to increase their reach to FreeBees users by being displayed on the Charity page.

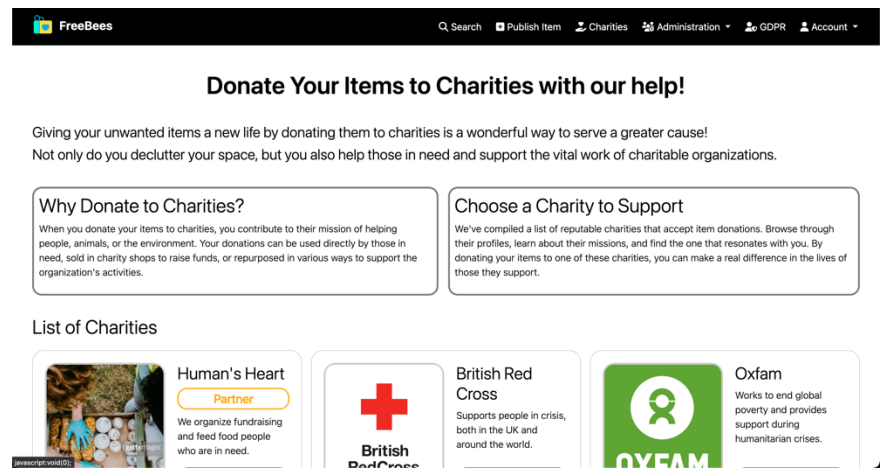


Figure 2 Charity Feature

Charity User has a dedicated way to sign up to our platform. On the register page (<https://freebees.bham.team/account/register>), they can check the Charity checkbox, which will display additional fields that they are invited to fill to create their charity user account correctly.

Once the Charity user registration process completed, charities will have to wait for their account to be authenticated. This is where a member of the admin team will take care of reaching out to the newly register Charity User to check that the charity indeed exists and that it's not fake.

Upon successful verification, the admin team will activate the charity user's account here: (<https://freebees.bham.team/admin/user-management>). After activation, the charity will be displayed on the charities page (<https://freebees.bham.team/charity>) for FreeBees' users to reach out to if they want to.

FreeBees' Charity user have an advantage over regular charities because they benefit of the "Partner" badge that puts them at the top of our Charities list. On the charities page, users will be able to visit the charities website to get in touch with them.

2.3. Publish Feature

The Publish item (<https://freebees.bham.team/publish>) is one of the key features of FreeBees, as it is the first step for users' interaction. After publishing, other users will be able to browse that item on the search page.

The publish item page can be accessed by the navigation bar. Once entered, the user will be required to enter item details. Additionally, users can select up to three tags for their item, which allows users to look up the regarding item when they are searching for items through tags and suggest the interested user in my-items page. Once the user has published an item, it will prompt the user to their item-list page. Otherwise, it will show an error that there is an error in which field. If the user wants to cancel during the process, there will be a confirmation box asking for confirmation.

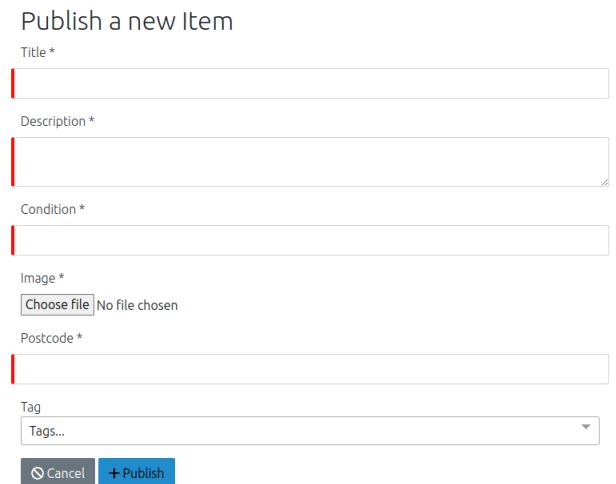



Figure 3 Publish Item Feature

The page includes a dropdown for tags which lists all the tags and allows users to search for a specific tag. If the user has selected three tags, it will disable all the other options unless the user cancels one of the selected options. It allows the user to dis-select a tag through the container by showing all selected tags or by unchecking the check box of the unwanted tag.

2.4. Item Management (My Items Page)

The Item Management (My Item Page) (<https://freebees.bham.team/my-items>) helps users to keep track of their items with ease. The page shows a table of items that the user uploaded the FreeBees. In the table, current user will be able to view item details and navigate to the item edit page or delete the item.

My Items

Image ^	Title ^	Description ^	Condition ^	Postcode ^	Upload Time ^	State ^	Receiver ^	Tag ^
	TUBE GAL	WACKY WAVING!	USED_LIKE_NEW	E2 8PH	2 May 2023 19:47:00	AVAILABLE		Toys, Arts and Crafts, Collectable

[View](#) [Edit](#) [Delete](#)

Figure 4 My Items List

There is a second table which shows the user a list of people who are looking items of the same category that the user uploaded. These people are also registered user on the FreeBees platform. The item giver could then initiate item giving request to this use(s) on the item management page.

Interested Users

User ↕	Postcode ↕	Looking for↕	Tag↕	
mayorng	B29 7AE	TUBE GAL	Toys	
hugo	B29 7DX	TUBE GAL	Collectable	
kit	B15 2TT	TUBE GAL	Arts and Crafts	

Figure 5 Interest User List

2.5. Search Feature

The search feature (<https://freebees.bham.team/search>) helps users find items in FreeBees from others

At first, it loads the items in the database that and displays the items sorted by title, the items displayed are not the current user. It only shows other users' items. It displays each item with a picture, title, tags, condition, and postcode.

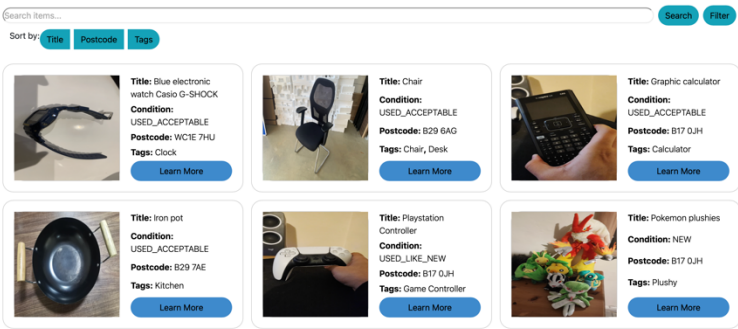


Figure 6 Search Feature

You can search by keywords to find items that has a title that has that keyword. Also, you can filter with tags/postcode/condition of the item to only show items that have any of the items you chose, the postcode you input, and the condition you selected. You can refresh the list by pressing the search button without any keyword in. You also can sort the items by title, postcode or tags that the current user has in their profile.

2.6. Chat feature

The Chat feature is an essential part of the FreeBees project. It has a simple yet powerful design that makes it easy for users to send and receive messages instantly.

Chat represents main features:

- Modern Technology: The Chat uses Angular for the frontend and Node.js for the backend with additional libraries, creating a smooth user experience.
- Local Database: A fast local database stores data in an array, making it easy to access information and have a perspective of integration with the independent database.
- Quick Responses: Users can get instant replies, making communication between buyers and sellers seamless.
- Easy-to-Use Interface: The Chat has a user-friendly design that makes navigating conversations and exchanging messages simple.

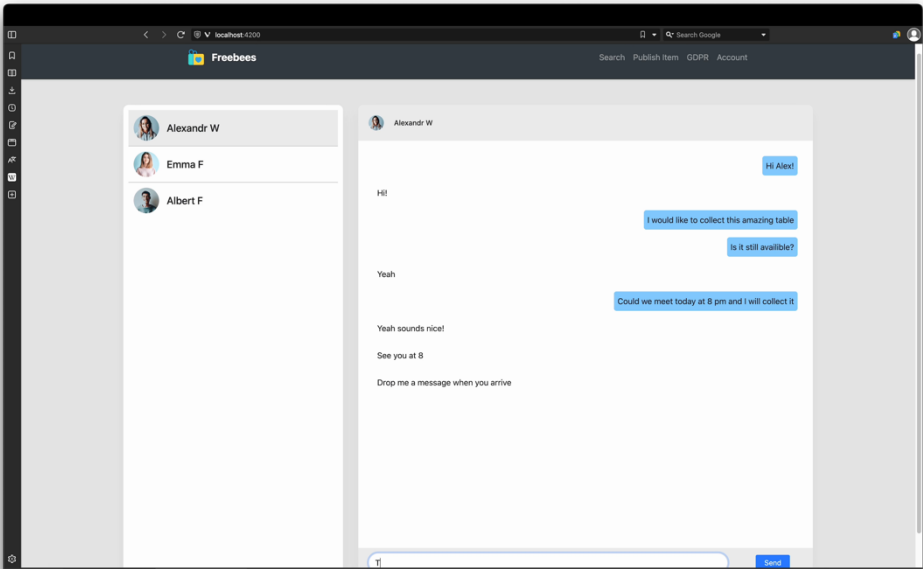


Figure 7 Chat Feature

2.7. User profile and Appearance setting

User profile and Appearance setting provide a personalized service for the user of FreeBees' user which enhance the user experience and accessibility.

User can edit their own profile in the user profile page (<https://freebees.bham.team/user-profile>), which can also be found at <UserProfile> in the <Account> dropdown list of navbar. The profile include:

- This is where user edit their postcodes and "lookingfor" tags.

User can also customize their website with Appearance setting (<https://freebees.bham.team/style>) feature, which can also be found at <Style> in the <Account> dropdown list of navbar. There is a button for user to switch the website between <Light Mode> and <Dark Mode>.

2.8. Request feature

The request features provide a service logic:

- A user can request for an item published by another user
- A user who published an item can also request another user to receive the item

A security inspection mechanism has been designed for following situation:

- Fake http request: only an authorized user can make request to another user, http request without authorization won't be accept by the service, which make sure the security of the user data.
- Unreasonable request:
 - o A user can't send request to him/herself
 - o A user can't request a non-existent item or user
 - o Only <AVAILABLE> item can be request. Item with status <LOCKED>/<GIVEN>/<CANCELLED> can't be requested.
- Repeat Request: A repeat request won't to process by the service only after the previous request be accept or reject.

3. Level of sophistication

3.1. Basic (required) level of sophistication

Basic (required) level of sophistication	Justification
1. Have a web front end accessible from a standard browser https://freebees.bham.team	FreeBees have a web front end accessible for most of mainstream browser including Edge, Chrome, Safari, Firefox and Opera. The front end is built with Angular framework and is integrated with Bootstrap 4 to achieve complex webpages effects and form controls.
2. Store some user-specific state in a database	In FreeBees, user may publish many items. The one-to-many relationship between user and items is applied for the feature of item management which can query all the item published by currently login user.



Style

Dark Mode

Figure 8 User Appearance Setting

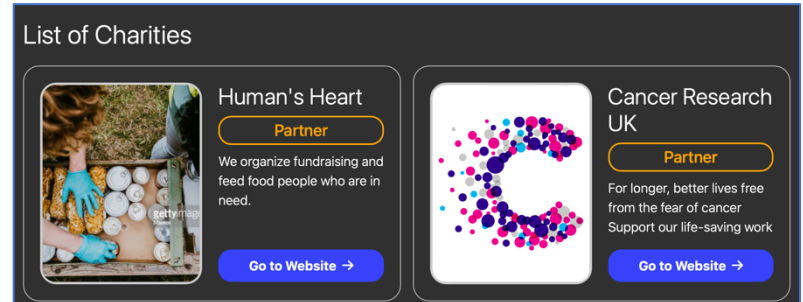


Figure 9 Dark Mode of Charity Feature

	Moreover, user may have different roles, including <ADMIN>/<USER>/CHARITY> which is also recorded in database. Also, <Request> is also a user-specific data, which record the parties involved in an item request act.
3. Include a relevant GDPR privacy policy for all personal information	The detailed GDPR privacy policy or each personal information is provided in a specific page in FreeBees website with URL (https://freebees.bham.team/gdpr). The page mentioned all the personal information that FreeBees may refer to. Relevant GDPR privacy policy and cookie notice are provided.
4. Use the given git repository for version control - team members must submit their own code via their own user account	FreeBees is version controlled by GitLab provided by the School. The submission history of each team member can be check in (https://git.cs.bham.ac.uk/team-projects-2022-23/team27-22/-/commits/main).
5. Use a CI/CD pipeline - we have provided an example pipeline and skeleton app	The deployed app is controlled by the CI/CD pipeline provided by GitLab. The script of which is in the root of the project, with some custom changes applied to the '.gitlab-ci.yml' file to improve team development efficiency. Additionally, it is also a great way to debug deployment environments and has resolved many issues in production. The modification of '.gitlab-ci.yml' can be check in (https://git.cs.bham.ac.uk/team-projects-2022-23/team27-22/-/commits/main/.gitlab-ci.yml)
6. The app should be deployed and accessible publicly - we have provided a VM for this purpose	The latest version of FreeBees app is deployed to the VM provided. Nginx is installed and thus reverse proxy service with appropriate configuration and HTTPS protocol support is possible. The FreeBees' domain (https://freebees.bham.team) can be accessed publicly.
7. Use a domain https:// (encrypted) and disallow http:// (plain text) requests	FreeBees' domain is (https://freebees.bham.team) which supports HTTPS protocol.
8. Implement features using "vertical slicing"	Each team member is responsible for an individual feature. The Frontend, Backend, Database (materialised through Jhipster JDL) is designed separately for each feature. The FreeBees development team has adopted Inversion of Control (IoC) and Aspect-Oriented Programming (AOP) to reduce the coupling of FreeBees code of individual vertically sliced feature.

3.2. Advanced Sophistication

Advanced Sophistication	Justify this requirement is met by the app
1. Have real users who provide feedback to help build the app	The FreeBees team has proposed some internal testing qualifications for trusted team members' friends. The testers have provided valuable feedback to FreeBees team.
2. Use complex APIs or libraries to implement useful features	The following APIs and libraries have been implemented to materialise features: Express, Socket.IO, node-postcodes.io.
3. Demonstrate creativity and flair in the features implemented	The project idea was praised by the TA as one of the projects that could be materialised and has positive impact to the society/community. While the Guild and the University have occasionally organised event to give away old items from student who have departure from the University of Birmingham, there is never an organized platform to make a persistent impact.
4. Look aesthetically pleasing, with a clear visual identity and relevant URL	A carefully designed logo is used to match the name and project idea. The overall layout is neat and tidy, with appealing visual element in the various pages, such as the homepage, search, and charity page.